



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029**

JUN 29 2004

The Honorable Edward G. Rendell
Governor of Pennsylvania
225 Main Capital Building
Harrisburg, Pennsylvania 17120

Dear Governor Rendell:

Fine-particle pollution represents one of the most significant barriers to clean air facing our nation today. These tiny particles – about 1/30th the diameter of a human hair – have been scientifically linked to serious human health problems. Their ability to be suspended in air for long periods of time makes them a public health threat far beyond the source of emissions. An important part of our nation's commitment to clean, healthy air deals with reducing levels of this fine particle or PM_{2.5} pollution.

In February, your State submitted its recommended boundaries for PM_{2.5} attainment and nonattainment areas. We have thoroughly reviewed your recommendations and the technical information you have submitted to support your recommendations. We appreciate the effort your State has made to develop this supporting information. Consistent with the Clean Air Act, this letter is to notify you that based on the information contained in your submittal, the Environmental Protection Agency (EPA) agrees with your recommended nonattainment designations and boundaries for most counties, but intends to modify your recommended designations and boundaries for some counties, as described in the enclosure discussed below.

Your Environmental Commissioner will receive a copy of this letter with a more detailed enclosure containing a description of areas where EPA intends to modify your State recommendations, and the basis for such modification. Should you have additional information that you wish to be considered by EPA in this process, we request that you provide it to us by September 1, 2004.

You will hear from us again in November when EPA takes the final step in the PM_{2.5} designation process and determines those areas that are in attainment (or unclassifiable) and those areas that are nonattainment. For areas in attainment, the challenge will be not only to maintain, but also to continue the progress you have made toward clean air. It is a commitment to no backsliding in your State's clean air status for fine particles. EPA will also issue a proposed fine particle implementation rule prior to final designations, which will allow you to proceed with planning to achieve clean air.

Customer Service Hotline: 1-800-438-2474

The Bush Administration is addressing fine particle pollution with a comprehensive national clean air strategy. This strategy includes EPA's recent rule to reduce pollution from nonroad diesel engines, and the proposed rule to reduce pollution from power plants in the eastern United States. These two rules are important components of EPA's efforts to help States and localities meet the more protective national fine-particle and 8-hour ozone air quality standards. Together these rules will help all areas of the country achieve cleaner air.

Should you or your staff have any questions, I invite you to contact our Regional Air Office. We look forward to a continued dialogue with you as we work together to implement the PM_{2.5} standards.

Sincerely,



Donald S. Welsh
Regional Administrator

Enclosures

cc w/Enclosures: The Honorable Kathleen A. McGinty, Secretary, PADEP

**Pennsylvania
Enclosure A**

The fourth column of the following table identifies the counties in Pennsylvania that EPA intends to designate as nonattainment.

Area	Counties included in the 1999 MSA	Pennsylvania Recommended Nonattainment Counties	EPA Intended Nonattainment Counties
Harrisburg	Cumberland Dauphin Lebanon Perry	Cumberland Dauphin	Cumberland Dauphin Lebanon
Johnstown	Cambria Somerset	Cambria	Cambria Indiana
Lancaster	Lancaster	Lancaster	Lancaster
Philadelphia PA-NJ-DE-MD	Philadelphia Delaware Montgomery Chester Bucks	Philadelphia Delaware Chester	Philadelphia Delaware Montgomery Chester Bucks
Pittsburgh	Allegheny Beaver Westmoreland Washington Butler Fayette	Allegheny Beaver Westmoreland Washington	Allegheny Beaver Butler Westmoreland Washington Armstrong Greene Lawrence
Reading	Berks	Berks	Berks
York	York	York	York
Youngstown, OH	Mahoning, OH Trumbull, OH		Mercer, PA
Total	21	13	22

***We have included in our recommended nonattainment areas counties in your state that are contiguous to a CMSA or MSA with a violating monitor, that are generally rural in character, and that contain an identifiable large emitting facility or facilities (e.g., power plants) which we believe contribute to the nearby nonattainment problem. We have included these counties in our initial recommendations in order to ensure that a sufficient portion of those counties, including such large facilities, is included within the boundaries of the nonattainment area as part of the final designations. We invite you to submit to us a recommendation as to what portion of such contiguous counties, encompassing the large facility or facilities, should be designated nonattainment. The county or counties in your state which we have included for this purpose are: Indiana, Armstrong and Greene.**

Enclosure B

State Summary

The Commonwealth of Pennsylvania recommended, in the Governor Edward Rendell correspondence of March 5, 2004, 16 counties to be designated nonattainment. On June 2, 2004, Secretary McGinty revised the recommendation to exclude three metropolitan counties: Bucks, Montgomery and Lebanon counties.

Based on the air quality data for the years 2001-2003, there are eight presumptive fine particulate (PM_{2.5}) nonattainment areas consisting of 21 counties in Pennsylvania. EPA agrees with Pennsylvania on the 13 counties recommended to be designated nonattainment. Based on the review of the recommendation as well as the additional information described below, EPA intends to designate nine additional counties as nonattainment: one additional county in the Harrisburg MSA, one additional county in the Johnstown MSA, two additional counties in the Philadelphia CMSA, four additional counties in the Pittsburgh CMSA and one county in the Youngstown, OH MSA. The following discussion provides our rationale for considering the modification to Pennsylvania's recommendation.

Harrisburg Area

Discussion

The Harrisburg Metropolitan Statistical Area (MSA) is comprised of four counties: Cumberland, Dauphin, Lebanon and Perry. Two counties in this MSA have monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 µg/m³. Based on the monitored violations, the Harrisburg MSA is considered a presumptive nonattainment area. Cumberland County has monitored 17.6 µg/m³ for the time period 2001-2003. The data, however, is incomplete at this time so this value will not be used as the Design Value. Dauphin County has monitored 15.8 µg/m³ for the 2001-2003 time period. The Dauphin County monitor is intended to be used as the Design Value monitor for the Harrisburg nonattainment area.

The Commonwealth of Pennsylvania recommended, in the Governor Edward Rendell correspondence of March 5, 2004, three counties to be included in the Harrisburg nonattainment area: Cumberland, Dauphin, and Lebanon. On June 2, 2004, Pennsylvania indicated a revised recommendation including only two counties for this area: Cumberland and Dauphin.

EPA has reviewed the Commonwealth's recommendations as well as additional data and agrees with the original recommendation. EPA intends, based on the information reviewed, to designate three counties as nonattainment in the Harrisburg area: Cumberland Dauphin and Lebanon.

Summary of Evaluation

Based on a review of the nine factors, EPA supports Pennsylvania's attainment recommendation for Perry County even though it is part of the presumptive nonattainment area (as described in the April 2003 and February 2004 EPA guidance) As seen in the tables below, Perry County is among the lowest ranking counties in the Harrisburg area, for most of the nine criteria. The county has monitored attainment at 12.0 µg/m³. The emissions are very low, when compared with other counties in the area. Considering the meteorology and distance to the monitor, the weighted emissions factor slightly rises; but the emission factor is still one-third of the larger emissions contributing counties in the area. The population, urban density data are among the lowest in the MSA. The commuting data indicates significant commuting, compared to population, but the relative vehicle miles traveled is low.

Comparatively, this county is lower in vehicle miles than the other 3 metropolitan counties as well as several of the surrounding attainment counties. Inclusion of the county is not supported by the analysis of the 9 factors. Therefore, EPA intends to designate Perry County, part of the metropolitan area, as attainment/unclassifiable.

In addition to the counties included in the MSA, EPA has reviewed the counties adjacent to the MSA. Berks, Lancaster and York Counties are adjacent to the MSA and are each single-county MSA's with monitored violations of the PM_{2.5} NAAQS. These counties were recommended by the Commonwealth as nonattainment. They will be discussed separately.

The adjacent counties of Franklin, Adams, Schuylkill, Northumberland and Juniata were evaluated for potential contribution to the nonattainment area. Northumberland and Juniata were similar to Perry County ranking very low in all factors. Although the weighted emissions score showed moderate contribution to the area from Franklin, Adams and Schuylkill; review of the remaining criteria, including an attaining monitor in Adams County, support Pennsylvania's recommendation of attainment. EPA intends, based on this review, not to add any surrounding counties to the Harrisburg MSA nonattainment area.

Lebanon County is part of the Harrisburg metropolitan area. Unlike Perry County, it is located adjacent to several other nonattainment areas. The inclusion of Lebanon County completes a contiguous nonattainment boundary.

A summary of the data which supports the intended designations is provided below.

SUMMARY OF HARRISBURG, PA MSA					
EPA Reg	ST	COUNTY	State Recommend PM _{2.5} Designation	EPA Intent PM _{2.5} Designation	Area - '99 C/MSA
MSA Total (excluding surrounding) = 4 counties					
3	PA	Cumberland	Nonattainment	Nonattainment	Harrisburg-Lebanon-Carlisle, PA
3	PA	Dauphin	Nonattainment	Nonattainment	Harrisburg-Lebanon-Carlisle, PA
3	PA	Lebanon	Attainment/unclassifiable	Nonattainment	Harrisburg-Lebanon-Carlisle, PA
3	PA	Perry	Attainment/unclassifiable	Attainment/unclassifiable	Harrisburg-Lebanon-Carlisle, PA
3	PA	Lancaster	Nonattainment	Nonattainment	Lancaster, PA
3	PA	Berks	Nonattainment	Nonattainment	Reading, PA
3	PA	York	Nonattainment	Nonattainment	York, PA
3	PA	Adams	Attainment/unclassifiable	Attainment/unclassifiable	
3	PA	Franklin	Attainment/unclassifiable	Attainment/unclassifiable	
3	PA	Juniata	Attainment/unclassifiable	Attainment/unclassifiable	
3	PA	Northumberland	Attainment/unclassifiable	Attainment/unclassifiable	
3	PA	Schuylkill	Attainment/unclassifiable	Attainment/unclassifiable	

SUMMARY OF FACTOR 1: EMISSIONS HARRISBURG, PA MSA

** Counties Listed by Percent Contribution to Area**

EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions
			PM	SO2	NOX	VOC	Amm	Carbon	Crustal	
3	PA	York	7,251	60,065	32,847	22,101	3,029	1,991	4,166	82.8
3	PA	Lancaster	5,673	10,786	20,901	27,383	17,154	1,746	3,569	66.7
3	PA	Berks	4,806	17,143	21,834	21,506	4,133	1,520	2,821	60.8
3	PA	Cumberland	2,638	3,265	14,246	11,526	2,050	1,020	1,393	40.5
3	PA	Dauphin	1,812	4,079	13,425	13,695	1,703	786	913	33.1
3	PA	Franklin	1,827	1,501	6,280	7,423	4,558	591	1,154	22.0
3	PA	Adams	1,608	793	3,645	4,518	2,617	641	901	21.4
3	PA	Schuylkill	1,441	8,390	7,857	7,212	1,311	483	833	20.0
3	PA	Lebanon	1,451	2,758	6,284	6,931	4,593	468	903	18.4
3	PA	Northumberland	1,156	2,004	4,143	6,046	1,229	441	644	16.0
3	PA	Perry	561	647	2,750	1,925	1,709	206	330	8.1
3	PA	Juniata	337	351	1,873	1,314	2,121	123	198	5.0

SUMMARY OF FACTOR 2: AIR QUALITY

EPA Reg	ST	COUNTY	Design Values						Estimated Air Quality	
			'01-'03		'00-'02		'99-'01		Maximum Estimate (inc. real)	# Estimated violating point/ #total pts
3	PA	Cumberland	17.6	na	15.8	na	15.8	na	15.5	2/11
3	PA	Dauphin	15.8	NA	15.6	NA	15.5	NA	16.1	4/8
3	PA	Lebanon	No Monitor						16.3	4/5
3	PA	Perry	13.0	A	12.7	A	12.5	a	13.8	0/7

**SUMMARY OF FACTOR 3 A:
Population Sorted Highest to Lowest**

EPA Reg	ST	COUNTY	2002	Area (sq miles)	Density '02	EPA Intent Designation	PM _{2.5}
3	PA	Dauphin	252,933	525	482	Nonattainment	
3	PA	Cumberland	217,743	550	396	Nonattainment	
3	PA	Schuylkill	148,505	779	191	Attainment/unclassifiable	
3	PA	Franklin	131,598	772	170	Attainment/unclassifiable	
3	PA	Lebanon	121,199	362	335	Nonattainment	
3	PA	Adams	94,437	520	182	Attainment/unclassifiable	
3	PA	Northumberland	93,371	460	203	Attainment/unclassifiable	
3	PA	Perry	43,876	554	79	Attainment/unclassifiable	
3	PA	Juniata	22,760	392	58	Attainment/unclassifiable	

**SUMMARY OF FACTOR 3B:
Population Density Sorted Highest to Lowest**

EPA Reg	ST	COUNTY	2002	Area (sq miles)	Density '02	EPA Intent Designation	PM _{2.5}
3	PA	Dauphin	252,933	525	482	Nonattainment	
3	PA	Cumberland	217,743	550	396	Nonattainment	
3	PA	Lebanon	121,199	362	335	Attainment/unclassifiable	
3	PA	Northumberland	93,371	460	203	Attainment/unclassifiable	
3	PA	Schuylkill	148,505	779	191	Nonattainment	
3	PA	Adams	94,437	520	182	Attainment/unclassifiable	
3	PA	Franklin	131,598	772	170	Attainment/unclassifiable	
3	PA	Perry	43,876	554	79	Attainment/unclassifiable	
3	PA	Juniata	22,760	392	58	Attainment/unclassifiable	

Factor 4: Commuting Patterns: Sorted by VMT Highest to Lowest

EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro		EPA Intent Designation	PM _{2.5}
			2002	Percent	Number		
3	PA	Dauphin	2,869	16	19,284	Nonattainment	
3	PA	Cumberland	2,594	22	23,237	Nonattainment	
3	PA	Schuylkill	1,463	6	3,964	Attainment/unclassifiable	
3	PA	Franklin	1,419	6	3,971	Attainment/unclassifiable	
3	PA	Lebanon	1,136	24	14,209	Nonattainment	
3	PA	Northumberland	797	4	1,802	Attainment/unclassifiable	
3	PA	Adams	734	6	2,738	Attainment/unclassifiable	
3	PA	Perry	397	63	13,452	Attainment/unclassifiable	
3	PA	Juniata	205	26	2,667	Attainment/unclassifiable	

**SUMMARY FACTOR 4 B: COMMUTING PATTERNS;
Sorted by Number of Commuters Highest to Lowest**

EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro		EPA Intent Designation	PM _{2.5}
			2002	Percent	Number		
3	PA	Cumberland	2,594	22	23,237	Nonattainment	
3	PA	Dauphin	2,869	16	19,284	Nonattainment	
3	PA	Lebanon	1,136	24	14,209	Nonattainment	
3	PA	Perry	397	63	13,452	Attainment/unclassifiable	
3	PA	Franklin	1,419	6	3,971	Attainment/unclassifiable	
3	PA	Schuylkill	1,463	6	3,964	Attainment/unclassifiable	
3	PA	Adams	734	6	2,738	Attainment/unclassifiable	
3	PA	Juniata	205	26	2,667	Attainment/unclassifiable	
3	PA	Northumberland	797	4	1,802	Attainment/unclassifiable	

SUMMARY FACTOR 5: EXPECTED GROWTH									
Sorted by Population Growth Highest to Lowest									
EPA Reg	ST	COUNTY	Population			VMT		EPA Intent Designation	PM _{2.5}
			2002	Growth '90-'00	Pct chng '90-'00	Growth '02-'10	Pct chng '02-'10		
3	PA	Cumberland	635,751	41,415	7	59	2	Attainment/unclassifiable	
3	PA	Dauphin	217,743	18,417	9	857	30	Attainment/unclassifiable	
3	PA	Lebanon	252,933	13,985	6	46	4	Nonattainment	
3	PA	Adams	94,437	13,018	17	213	29	Attainment/unclassifiable	
3	PA	Franklin	131,598	8,231	7	-94	-7	Nonattainment	
3	PA	Perry	121,199	6,583	6	227	57	Attainment/unclassifiable	
3	PA	Juniata	22,760	2,196	11	90	44	Nonattainment	
3	PA	Northumberland	93,371	-2,215	-2	-54	-7	Attainment/unclassifiable	
3	PA	Schuylkill	148,505	-2,249	-1	-139	-10	Attainment/unclassifiable	

Factors 6 and 7 Meteorology and Geography/Topography											
EPA Reg	ST	COUNTY	Basic Weighted Emissions	WD & 1/x Weighted Emissions	LCC x	LCC y	Delta X	Delta Y	Dist	Quad	Freq
3	PA	Dauphin	33.1	20.3	1077.348	133.448	-0.709	18.260	18.274	NW	44
3	PA	York	82.9	12.6	1093.515	81.730	15.458	-33.458	36.857	SE	22
3	PA	Lancaster	66.6	6.7	1129.403	103.286	51.346	-11.902	52.707	SE	21
3	PA	Cumberland	40.5	6.4	1042.276	100.257	-35.782	-14.931	38.772	SW	24
3	PA	Berks	60.8	3.6	1150.368	142.537	72.311	27.349	77.310	NE	18
3	PA	Adams	21.4	2.4	1052.284	70.353	-25.773	-44.835	51.715	SW	23
3	PA	Perry	8.1	2.3	1040.710	124.587	-37.348	9.399	38.512	NW	44
3	PA	Lebanon	18.4	1.9	1107.952	133.462	29.894	18.274	35.037	NE	14
3	PA	Franklin	21.9	1.8	1010.330	71.187	-67.728	-44.001	80.766	SW	26
3	PA	Schuylkill	20.0	1.3	1121.709	170.793	43.652	55.605	70.692	NE	18
3	PA	Juniata	5.0	1.0	1022.512	133.739	-55.545	18.551	58.561	NW	44
3	PA	Northumberland	16.0	0.9	1081.275	178.778	3.217	63.590	63.672	NE	15

Wind Direction and Distance Weighting: The weighted emissions ranking of counties considers the contribution of pollutants to the "urban excess" of the MSA on a speciated basis. The general form of the ranking considers each county in the same way, regardless of direction and distance from the violating monitor. To account for the effect of direction and distance in a simplistic way a modified emissions score was calculated as follows. For each county in and adjacent to the MSA the distance and general direction (expressed as a compass quadrant) of the county centroid to the MSA's design value monitor were determined. For each county a 10-year or longer average frequency of occurrence of the wind direction quadrant was derived. The county's weighted emissions score was modified by multiplying the score by the percentage of the wind direction from the county centroid to the design value monitor and divided by the distance in kilometers. For example, if the wind frequency was 25% and the distance was 50 kilometers, the emissions score would be modified by the fraction of 25, 50, or 0.5. The cumulative percentages were then calculated by normalizing by the sum of the modified emissions scores.

Factor 8: Jurisdictional Boundaries: The Harrisburg area has recently been designated nonattainment for the 8-hour ozone standard. Included with the four MSA counties, Franklin, Adams and Perry were included in the ozone nonattainment area. In the ozone review, Franklin County monitored violations of the ozone standard. For fine particulate, there are no monitored violations in the surrounding counties. Lebanon County is part of the Harrisburg metropolitan area. Unlike Perry County, it is located adjacent to several other nonattainment areas. The inclusion of Lebanon County completes a contiguous nonattainment boundary.

Factor 9: Level of Control of emission sources: PA identified large sources greater than 1000 tons per year for any pollutant and evaluated its distance to a violating monitor for fine particulate. This screening identified a source in Schuylkill County as 37 miles from a violating monitor. The wind and direction analysis, however, confirmed that this source is not significantly contributing to the

nonattainment area.

Johnstown Area

Discussion

The Johnstown Metropolitan Statistical Area (MSA) is comprised of two counties: Cambria and Somerset. Cambria County has monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 µg/m³. Based on the monitored violations, the Johnstown MSA is considered a presumptive nonattainment area. Cambria has monitored 15.8 µg/m³ for the time period 2001-2003. This monitor is intended to be used as the Design Value monitor for the Johnstown nonattainment area.

The Commonwealth of Pennsylvania recommended, in the Governor Edward Rendell correspondence of March 5, 2004, Cambria County to be included in the Johnstown nonattainment area.

EPA has reviewed the Commonwealth's recommendations as well as additional data provided on June 1, 2004. EPA agrees with the recommendation of Cambria as nonattainment and Somerset County as attainment. EPA intends, based on the information reviewed, to designate an adjacent county, Indiana, as nonattainment in the Johnstown area.

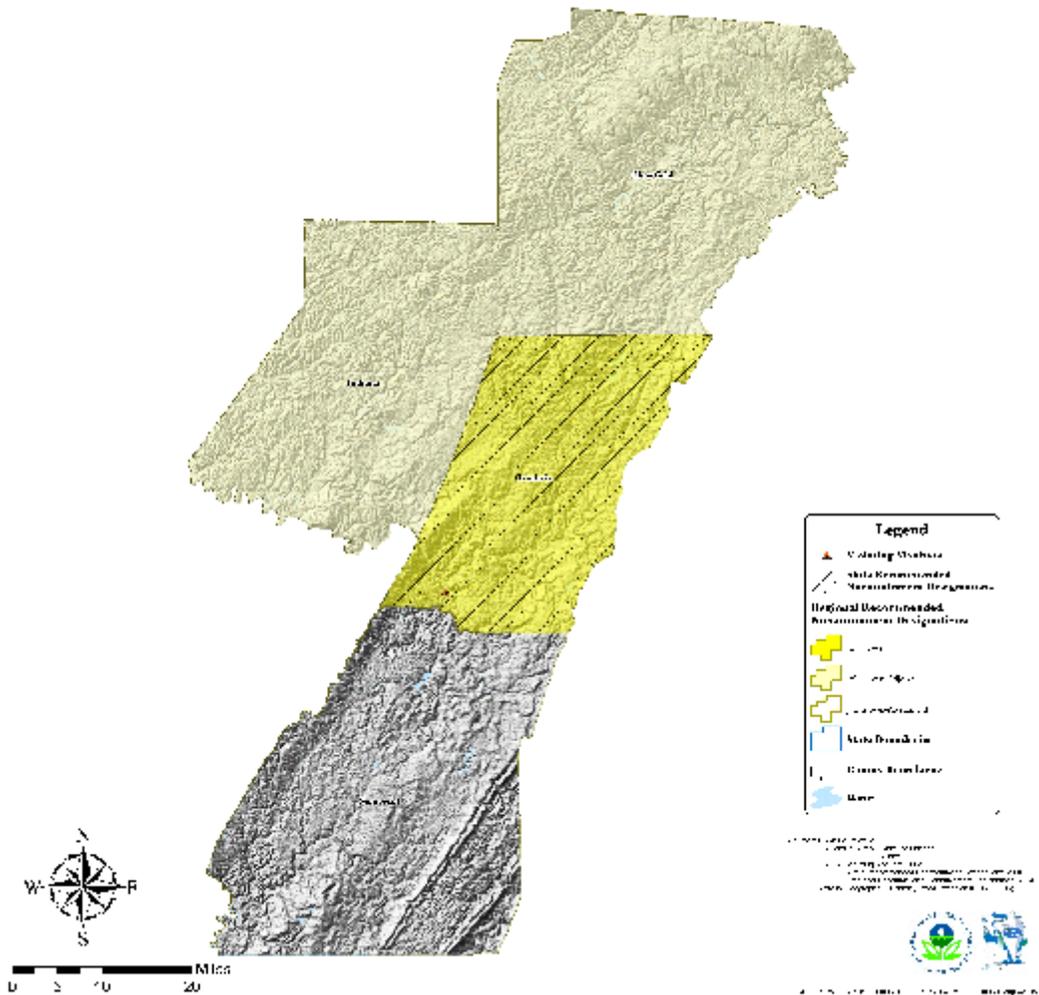
Summary of Evaluation

EPA has identified Somerset County part of the metropolitan area, as well as the adjacent counties of Blair and Bedford Counties in Pennsylvania and Garrett County, MD to have very low contribution from all factors to the metropolitan area. There is sufficient evidence to alter the presumptive boundaries the nonattainment area to exclude Somerset County.

EPA has reviewed the adjacent counties to the Johnstown MSA. There are no distinguishing characteristics for the area when comparing the population density, growth and commuting patterns. Indiana County is adjacent to the MSA and shows a large emissions contribution to the area. Indiana County contributes a comparatively large portion of emissions to the Johnstown area. The disproportionate amount of emissions provides substantial evidence to include Indiana County in the nonattainment area. Moderate emissions contribution from Clearfield County, PA and Allegany County, MD counties suggested possible inclusion, however, the inclusion of these counties is not supported by analysis of the nine factors. The weighted emissions factor, considering meteorology and distance, is less than half the value for Cambria. This difference highlights the significance of geography and meteorology in this designation analysis. Geography and topography, however, provide justification for the intended nonattainment boundaries. The topography of the area isolates the city from inter-urban transport of low-level emissions. Over 34 square miles of mountain upland drains down into the City and then out the deepest river gap in the eastern United States. The city itself is in the approximately two-mile wild flood plane formed by the junction of the Stonycreek and Little Conemaugh Rivers, and the narrow Conemaugh River Gap where water flows out of the City. The Conemaugh River Gap is over 1600 feet deep when measured for the top of Rager Mountain and the level of the river at its outfall from the Gap in Robinson, Indiana County. The basin within which the city lies is about 300 feet below the surrounding ridgelines. The city is effectively isolated from inter-urban transport of low level emissions.

Geography also plays a role. The emissions from the Shawville Power Plant, suggest a moderate emissions contribution from Clearfield county. This plant, however, is located 60 miles, predominantly downwind, from the nearest violating monitor. This distance, along with a low frequency of potential impact, provides additional justification for considering Clearfield attainment. Based on review of the factors, EPA intends to add Indiana County alone to the nonattainment area boundaries.

Johnstown Area PM_{2.5} Recommended Nonattainment Designations



The supporting data supporting the modification to the Pennsylvania recommendation to include Indiana County is provided in the tables below.

SUMMARY OF JOHNSTOWN, PA MSA

EPA Reg	ST	COUNTY	State Recommend PM _{2.5} Designation	EPA Intent PM _{2.5} Designation	Area - '99 C/MSA
C/MSA Total (excluding surrounding) = 2 counties					
3	PA	Cambria	Nonattainment	Nonattainment	Johnstown, PA
3	PA	Somerset	Attainment/unclassifiable	Attainment/unclassifiable	Johnstown, PA
3	MD	Allegany	Attainment/unclassifiable	Attainment/unclassifiable	Cumberland, MD-WV
3	PA	Bedford	Attainment/unclassifiable	Attainment/unclassifiable	
3	PA	Blair	Attainment/unclassifiable	Attainment/unclassifiable	Altoona, PA
3	PA	Clearfield	Attainment/unclassifiable	Attainment/unclassifiable	
3	MD	Garrett	Attainment/unclassifiable	Attainment/unclassifiable	
3	PA	Indiana	Attainment/unclassifiable	Nonattainment	Adjacent County

SUMMARY OF FACTOR 1: EMISSIONS JOHNSTOWN, PA MSA

**** Counties Listed by Percent Contribution to Johnstown MSA****

EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions
			PM	SO ₂	NOX	VOC	Amm	Carbon	Crustal	
3	PA	Indiana	10,981	158,311	52,550	4,683	692	2,428	6,868	41.3
3	PA	Clearfield	3,466	43,394	11,437	5,124	344	1,000	2,020	12.6
3	PA	Westmoreland	3,320	3,593	18,461	17,371	1,119	1,533	1,564	12.3
3	MD	Allegany	3,041	20,453	12,262	4,991	393	943	1,636	9.8
3	PA	Cambria	1,594	8,716	8,287	7,229	490	679	804	6.3
3	PA	Fayette	1,600	2,053	6,788	6,625	458	641	856	5.1
3	PA	Blair	1,044	4,434	6,395	6,456	1,203	461	523	4.2
3	PA	Somerset	1,139	1,548	4,706	4,769	1,494	415	659	3.4
3	PA	Bedford	730	888	4,869	3,927	1,440	307	389	2.7
3	MD	Garrett	571	709	4,445	2,424	719	275	268	2.4

SUMMARY OF FACTOR 2: AIR QUALITY Johnstown, PA MSA										
EPA Reg	ST	COUNTY	Design Values						Estimated Air Quality	
			'01-'03		'00-'02		'99-'01		Maximum Estimate (inc. real)	# Estimated violating point/ #total pts
3	PA	Cambria	15.8	NA	15.8	NA	15.3	NA	15.8	5/13
3	PA	Somerset	No Monitor						15.6	8/15
3	PA	Indiana	No Monitor						15.6	5/12
3	PA	Clearfield	No Monitor						14.0	0/17

SUMMARY OF FACTOR 3: POPULATION Sorted Highest to Lowest							
\	ST	COUNTY	Population & Area			EPA Intent Designation	PM _{2.5}
			2002	Area (sq miles)	Density '02		
3	PA	Westmoreland	368,428	1,023	360	Nonattainment	
3	PA	Cambria	150,452	688	219	Nonattainment	
3	PA	Fayette	146,654	790	186	Attainment	
3	PA	Blair	127,840	526	243	Attainment	
3	PA	Indiana	88,780	830	107	Nonattainment	
3	PA	Clearfield	83,203	1,147	73	Attainment	
3	PA	Somerset	79,456	1,075	74	Attainment	
3	MD	Allegany	74,203	425	175	Attainment	
3	PA	Bedford	49,944	1,015	49	Attainment	
3	MD	Garrett	29,878	648	46	Attainment	

SUMMARY OF FACTOR 3: POPULATION Density Sorted Highest to Lowest							
\	ST	COUNTY	Population & Area			EPA Intent Designation	PM _{2.5}
			2002	Area (sq miles)	Density '02		
3	PA	Westmoreland	368,428	1,023	360	Nonattainment	
3	PA	Blair	127,840	526	243	Attainment	
3	PA	Cambria	150,452	688	219	Nonattainment	
3	PA	Fayette	146,654	790	186	Attainment	
3	MD	Allegany	74,203	425	175	Attainment	
3	PA	Indiana	88,780	830	107	Nonattainment	
3	PA	Somerset	79,456	1,075	74	Attainment	
3	PA	Clearfield	83,203	1,147	73	Attainment	
3	PA	Bedford	49,944	1,015	49	Attainment	
3	MD	Garrett	29,878	648	46	Attainment	

SUMMARY FACTOR 4A: Vehicle Miles Traveled; Sorted Highest to Lowest					
EPA Reg	ST	COUNTY	VMT	Commuting to Other	
			2002	Percent	Number
3	PA	Westmoreland	3,217	1	1,223
3	MD	Allegany	1,297	0	17
3	PA	Blair	1,220	2	1,205
3	PA	Cambria	1,176	4	2,649
3	PA	Fayette	1,139	1	431
3	PA	Clearfield	1,056	1	519
3	MD	Garrett	963	2	243
3	PA	Bedford	943	3	563
3	PA	Somerset	932	15	5,174
3	PA	Indiana	727	5	1,804

SUMMARY FACTOR 4B Percent of Commuters; Sorted Highest to Lowest					
EPA Reg	ST	COUNTY	VMT	Commuting to Other	
			2002	Percent	Number
3	PA	Somerset	932	15	5,174
3	PA	Indiana	727	5	1,804
3	PA	Cambria	1,176	4	2,649
3	PA	Bedford	943	3	563
3	PA	Blair	1,220	2	1,205
3	MD	Garrett	963	2	243
3	PA	Westmoreland	3,217	1	1,223
3	PA	Fayette	1,139	1	431
3	PA	Clearfield	1,056	1	519
3	MD	Allegany	1,297	0	17

SUMMARY FACTOR 5: EXPECTED GROWTH;						Growth '90 - '00		
Sorted Highest to Lowest								
EPA Reg	ST	COUNTY	Population			VMT		
			2002	Growth '90-'00	Pct chng '90-'00	Growth '96-02	Pct chng '96-02	Pct chng '02-'10
3	PA	Clearfield	83,203	5,285	7	364	53	-17
3	PA	Fayette	146,654	3,293	2	140	14	38
3	PA	Bedford	49,944	2,065	4	437	86	-32
3	PA	Somerset	79,456	1,805	2	179	24	1
3	MD	Garrett	29,878	1,708	6	532	123	-39
3	MD	Allegany	74,203	-16	-0	513	65	-29
3	PA	Westmoreland	368,428	-328	-0	-22	-1	24
3	PA	Indiana	88,780	-389	-0	83	13	42
3	PA	Blair	127,840	-1,398	-1	168	16	8
3	PA	Cambria	150,452	-10,431	-6	-4	-0	44

Factors 6 and 7 Meteorology and Geography/Topography											
EPA Reg	ST	COUNTY	Basic Weighted Emissions	WD & 1/x Weighted Emissions	LCC x	LCC y	Delta X	Delta Y	Dist	Quad	Freq
					3	PA	Indiana	629.7	36.7	886.5331737	129.15064
3	PA	Clearfield	111.2	8.6	861.1271938	87.534375	-47.497	-8.867	48.3	SW	34
3	PA	Westmoreland	68.4	3.7	920.051624	114.962362	11.427	18.561	21.8	NE	13
3	MD	Allegany	119.5	2.5	939.557552	28.8033687	30.933	-67.598	74.3	SE	19
3	PA	Cambria	181.5	2.0	932.0905382	174.876757	23.466	78.476	81.9	NE	13
3	PA	Fayette	31.6	2.8	902.7313377	57.2078909	-5.893	-39.193	39.6	SW	33
3	PA	Blair	46.6	2.1	850.9817211	45.7508977	-57.642	-50.650	76.7	SW	32
3	PA	Somerset	43.9	1.1	952.3217217	118.460119	43.698	22.059	48.9	NE	13
3	PA	Bedford	25.0	1.2	944.394876	65.9508969	35.771	-30.450	47.0	SE	21
3	MD	Garrett	22.2	0.8	887.5371019	9.91916422	-21.087	-86.482	89.0	SW	30

Wind Direction and Distance Weighting: The weighted emissions ranking of counties considers the contribution of pollutants to the "urban excess" of the MSA on a speciated basis. The general form of the ranking considers each county in the same way, regardless of direction and distance from the violating monitor. To account for the effect of direction and distance in a simplistic way a modified emissions score was calculated as follows. For each county in and adjacent to the MSA the distance and general direction (expressed as a compass quadrant) of the county centroid to the MSA's design value monitor were determined. For each county a 10-year or longer average frequency of occurrence of the wind direction quadrant was derived. The county's weighted emissions score was modified by multiplying the score by the percentage of the wind direction from the county centroid to the design value monitor and divided by the distance in kilometers. For example, if the wind frequency was 25% and the distance was 50 kilometers, the emissions score would be modified by the fraction of 25/50, or 0.5. The cumulative percentages were then calculated by normalizing by the sum of the modified emissions scores.

Factor 8 Jurisdictional Boundaries: The Johnstown MSA was designated Subpart (Basic) 1 nonattainment for the 8-hour ozone standard. Indiana and Clearfield were included in the ozone designation. Clearfield County was included in the ozone nonattainment boundary as it had a violating monitor. Clearfield is estimated to be within the fine particulate standard.

Factor 9 Level of Control: The Shawville Power Plant, located in the northern portion of Clearfield County, has installed a wet limestone scrubber on one of its three units. The plant is located over 100 kilometers to the northeast of the violating monitor in the Johnstown area.

Lancaster Area

Discussion

The Lancaster Metropolitan Statistical Area (MSA) is a single county area. Lancaster County has monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 µg/m³. Based on the monitored violations, the Lancaster MSA is considered a presumptive nonattainment area. Lancaster has monitored 17.0 µg/m³ for the time period 2001-2003. This monitor is intended to be used as the Design Value monitor for the Lancaster nonattainment area.

The Commonwealth of Pennsylvania recommended, in the Governor Edward Rendell correspondence of March 5, 2004, Lancaster County to be designated nonattainment as a single county MSA. EPA agrees with the Commonwealth's recommendation for this area. Lancaster County is surrounded by counties in other MSAs. Therefore, additional review of this area is unnecessary.

New York Area

Pike County, PA has been included in the New York Metropolitan Area. A review of the area, however, shows that Pike and the next closest county in New Jersey are not contributing to the area. EPA agrees with Pennsylvania's recommendation that this county not be included with the New York nonattainment area.

Philadelphia Area

Discussion

The Philadelphia Metropolitan Statistical Area (MSA) is comprised, in part, of five counties in Pennsylvania. Additional counties in Delaware, Maryland and New Jersey are included in the MSA. The table below lists the counties in the MSA. Four counties in this MSA have monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 µg/m³. Based on the monitored violations, the Philadelphia MSA is considered a presumptive nonattainment area. The three Pennsylvania Counties monitoring violations are Philadelphia, Delaware and Chester Counties. In addition, New Castle County, DE monitored a violation. Philadelphia County monitored 16.4 µg/m³ for the time period 2001-2003. This value is being considered the Design Value for the nonattainment area.

The Commonwealth of Pennsylvania recommended, in the Governor Edward Rendell correspondence of March 5, 2004, five metropolitan counties to be included in the Philadelphia nonattainment area: Philadelphia, Delaware, Montgomery, Chester and Bucks Counties. On June 1, 2004, Pennsylvania indicated a revised recommendation excluding two counties from this area: Bucks and Montgomery.

EPA has reviewed the Commonwealth's recommendations as well as additional data and agrees with the original recommendation. EPA intends, based on the information reviewed, to designate five counties as nonattainment in the Philadelphia area: Philadelphia, Delaware, Montgomery, Chester and Bucks Counties.

Summary of Evaluation

EPA has identified Cecil County, MD, part of the presumptive area, as having very low contribution to the area. The county has an attaining monitor (13.0 µg/m³ compared to the National Standard of 15.0 µg/m³). A review of the remaining factors provides sufficient evidence to modify the nonattainment boundary to exclude Cecil County, MD. The New Jersey counties have been evaluated and are discussed in a separate document prepared by EPA Region 2. New Castle County, DE and Chester and Montgomery Counties in Pennsylvania have moderate to high emissions contribution to the area, based on the weighted emissions factor. EPA has reviewed these counties based the nine factors to determine the appropriate designation. The population density, growth and commuting patterns when compared to the core MSA counties in this area support including these counties in the nonattainment area. The tables below summarize the data used support the modification of Pennsylvania's recommendation to include Bucks and Montgomery Counties with the three Pennsylvania violating counties in the MSA.

PHILADELPHIA, PA MSA

Status of Counties: Alphabetical by State

EPA Reg	ST	COUNTY	State Recommend PM _{2.5} Designation	EPA Intent PM _{2.5} Designation	Area - '99 C/MSA
3	DE	New Castle	Nonattainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	MD	Cecil	Attainment/unclassifiable	Attainment/unclassifiable	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Atlantic	Attainment/unclassifiable	Attainment/unclassifiable	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Burlington	Attainment/unclassifiable	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Camden	Attainment/unclassifiable	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Cape May	Attainment/unclassifiable	Attainment/unclassifiable	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Cumberland	Attainment/unclassifiable	Attainment/unclassifiable	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Gloucester	Attainment/unclassifiable	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
2	NJ	Salem	Attainment/unclassifiable	Attainment/unclassifiable	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	PA	Bucks	Nonattainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	PA	Chester	Attainment/unclassifiable	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	PA	Delaware	Nonattainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	PA	Montgomery	Attainment/unclassifiable	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD
3	PA	Philadelphia	Nonattainment	Nonattainment	Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD

SUMMARY OF FACTOR 1: EMISSIONS PHILADELPHIA, PA MSA

** Counties Listed by Percent Contribution to area**

EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions	EPA Intent PM _{2.5} Designation
			PM	SO ₂	NOX	VOC	Amm	Carbon	Crusial		
3	DE	New Castle	4,558	61,499	34,640	24,088	2,605	2,276	1,645	18.6	Nonattainment
3	PA	Philadelphia	3,944	16,861	55,011	50,439	3,506	2,116	1,200	14.0	Nonattainment
3	PA	Delaware	3,173	24,882	33,259	19,071	903	1,458	1,225	11.1	Nonattainment
3	PA	Montgomery	3,910	8,721	21,191	32,545	1,293	1,905	1,700	8.7	Nonattainment
3	PA	Chester	3,716	11,391	16,909	17,697	2,267	1,228	2,226	6.9	Nonattainment
3	PA	Bucks	3,100	6,870	16,852	23,024	1,124	1,443	1,444	6.8	Nonattainment
2	NJ	Gloucester	1,909	9,154	21,849	15,087	741	1,035	697	6.5	Nonattainment
2	NJ	Camden	2,151	4,120	17,025	20,904	887	1,286	727	5.9	Nonattainment
2	NJ	Burlington	2,298	2,330	15,113	18,139	913	1,326	836	5.6	Nonattainment
2	NJ	Cape May	2,157	14,578	7,894	11,886	206	938	1,044	5.5	Attainment/unclassifiable
2	NJ	Atlantic	1,404	1,905	8,676	11,906	437	773	563	3.3	Attainment/unclassifiable
2	NJ	Cumberland	1,374	1,941	7,054	9,279	423	638	669	2.8	Attainment/unclassifiable
2	NJ	Salem	1,243	4,485	5,457	8,229	534	487	653	2.6	Attainment/unclassifiable
3	MD	Cecil	950	948	5,502	4,441	505	401	518	1.8	Attainment/unclassifiable

SUMMARY OF FACTOR 2: AIR QUALITY PHILADELPHIA MSA

** Counties Listed by Highest DV **

EPA Reg	ST	COUNTY	Design Values			Estimated Air Quality based		EPA Intent PM _{2.5} Designation	
			'01-'03	'00-'02	'99-'01	Maximum Estimate (inc. real)	# Estimated violating point/#total pts		
3	PA	Philadelphia	16.4	NA	16.8	NA	16.8	3/5	Nonattainment
3	DE	New Castle	16.2	NA	16.5	NA	16.5	6/12	Nonattainment
3	PA	Delaware	15.6	NA	15.7	NA	15.0	4/4	Nonattainment
3	PA	Chester	15.1	na	14.6	a	16.1	10/11	Nonattainment
2	NJ	Camden	14.6	a	14.8	a	14.6	0/4	Nonattainment
3	PA	Bucks	14.6	A	14.3	a	13.4	0/10	Nonattainment
3	PA	Montgomery	14.3	A	14.2	A	13.8	1/6	Nonattainment
2	NJ	Gloucester	13.8	a	14.2	A	14.3	0/6	Nonattainment
3	MD	Cecil	13.0	a	13.4	A	12.5	0/7	Attainment/unclassifiable
2	NJ	Atlantic	11.6	a	11.4	a	11.2	0/7	Attainment/unclassifiable
2	NJ	Burlington	No Monitor				14.4	0/13	Nonattainment
2	NJ	Cape May	No Monitor				12.4	0/3	Attainment/unclassifiable
2	NJ	Cumberland	No Monitor				13.8	0/8	Attainment/unclassifiable
2	NJ	Salem	No Monitor				15.1	1/5	Attainment/unclassifiable

SUMMARY OF FACTOR 3: POPULATION

Counties Listed Highest to Lowest Population

EPA Reg	ST	COUNTY	Population & Area			EPA Intent	PM _{2.5} Designation
			2002	Area (sq miles)	Density '02		
3	PA	Philadelphia	1,492,231	135	11,054	Nonattainment	
3	PA	Montgomery	766,517	483	1,587	Nonattainment	
3	PA	Bucks	610,440	608	1,004	Nonattainment	
3	PA	Delaware	553,435	184	3,008	Nonattainment	
3	DE	New Castle	512,370	426	1,203	Nonattainment	
2	NJ	Camden	511,957	222	2,306	Nonattainment	
3	PA	Chester	450,160	756	595	Nonattainment	
2	NJ	Burlington	437,871	805	544	Nonattainment	
2	NJ	Gloucester	262,049	325	806	Nonattainment	
2	NJ	Atlantic	259,423	561	462	Attainment/unclassifiable	
2	NJ	Cumberland	147,768	489	302	Attainment/unclassifiable	
2	NJ	Cape May	102,013	255	400	Attainment/unclassifiable	
3	MD	Cecil	90,335	348	260	Attainment/unclassifiable	
2	NJ	Salem	64,438	338	191	Attainment/unclassifiable	

SUMMARY OF FACTOR 3B POPULATION DENSITY

Counties Listed Highest to Lowest Population

EPA Reg	ST	COUNTY	Population & Area			EPA Intent	PM _{2.5} Designation
			2002	Area (sq miles)	Density '02		
3	PA	Philadelphia	1,492,231	135	11,054	Nonattainment	
3	PA	Montgomery	766,517	483	1,587	Nonattainment	
3	PA	Bucks	610,440	608	1,004	Nonattainment	
3	PA	Delaware	553,435	184	3,008	Nonattainment	
3	DE	New Castle	512,370	426	1,203	Nonattainment	
2	NJ	Camden	511,957	222	2,306	Nonattainment	
3	PA	Chester	450,160	756	595	Nonattainment	
2	NJ	Burlington	437,871	805	544	Nonattainment	
2	NJ	Gloucester	262,049	325	806	Nonattainment	
2	NJ	Atlantic	259,423	561	462	Attainment/unclassifiable	
2	NJ	Cumberland	147,768	489	302	Attainment/unclassifiable	
2	NJ	Cape May	102,013	255	400	Attainment/unclassifiable	
3	MD	Cecil	90,335	348	260	Attainment/unclassifiable	
2	NJ	Salem	64,438	338	191	Attainment/unclassifiable	

SUMMARY FACTOR 4: VMT					
Counties Listed Highest to Lowest					
EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro	
			2002	Percent	Number
3	PA	Philadelphia	10,213	23	129,902
3	DE	New Castle	4,957	11	27,598
3	PA	Montgomery	4,677	32	120,472
2	NJ	Camden	4,332	43	98,432
3	PA	Bucks	3,830	31	93,563
2	NJ	Burlington	3,748	29	60,278
3	PA	Delaware	3,513	44	111,594
3	PA	Chester	3,128	32	70,486
2	NJ	Gloucester	2,312	51	62,141
2	NJ	Atlantic	2,236	13	14,237
3	MD	Cecil	1,340	39	16,195
2	NJ	Cumberland	1,166	22	12,911
2	NJ	Cape May	749	26	11,360
2	NJ	Salem	734	48	13,922

SUMMARY FACTOR 4: Number of Commuters					
Sorted Highest to Lowest					
EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro	
			2002	Percent	Number
3	PA	Philadelphia	10,213	23	129,902
3	PA	Montgomery	4,677	32	120,472
3	PA	Delaware	3,513	44	111,594
2	NJ	Camden	4,332	43	98,432
3	PA	Bucks	3,830	31	93,563
3	PA	Chester	3,128	32	70,486
2	NJ	Gloucester	2,312	51	62,141
2	NJ	Burlington	3,748	29	60,278
3	DE	New Castle	4,957	11	27,598
3	MD	Cecil	1,340	39	16,195
2	NJ	Atlantic	2,236	13	14,237
2	NJ	Salem	734	48	13,922
2	NJ	Cumberland	1,166	22	12,911
2	NJ	Cape May	749	26	11,360

Factor 5 Growth Rate Sorted Highest to Lowest							
EPA Reg	ST	COUNTY	Population			VMT	
			2002	Growth '90-'00	Pct chng '90-'00	Growth '96-'02	Pct chng '96-'02
2	NJ	Atlantic	259,423	28,225	13	148	7
3	PA	Bucks	610,440	56,461	10	12	0
2	NJ	Burlington	437,871	28,328	7	449	14
2	NJ	Camden	511,957	6,108	1	261	6
2	NJ	Cape May	102,013	7,237	8	154	26
3	MD	Cecil	90,335	14,604	20	305	29
3	PA	Chester	450,160	57,105	15	23	1
2	NJ	Cumberland	147,768	8,385	6	158	16
3	PA	Delaware	553,435	3,213	1	-71	-2
2	NJ	Gloucester	262,049	24,591	11	257	13
3	PA	Montgomery	766,517	71,986	11	-141	-3
3	DE	New Castle	512,370	58,319	13	270	6
3	PA	Philadelphia	1,492,231	-68,027	-4	-207	-2
2	NJ	Salem	64,438	-1,009	-2	43	6

Factors 6 and 7 Meteorology and Geography/Topography												
EPA Reg	ST	COUNTY	Basic Weighted Emissions		WD & 1/x Weighted Emissions	LCC x	LCC y	Delta X	Delta Y	Dist	Quad	Freq
3	PA	Philadelphia	14.0	32.6	51.6	1220.7	110.6	0.6	3.2	3.3	NE	20.0
3	PA	Delaware	11.1	43.7	10.2	1201.6	100.2	-18.5	-7.2	19.8	SW	30.0
3	PA	Montgomery	8.7	52.4	5.6	1198.9	130.7	-21.2	23.3	31.5	NW	34.0
3	PA	Chester	6.9	59.3	2.4	1171.0	102.1	-49.1	-5.3	49.4	SW	29.0
3	PA	Bucks	6.8	66.1	3.4	1216.0	148.2	-4.1	40.8	41.1	NW	35.0
2	NJ	Gloucester	6.5	72.6	2.2	1225.5	81.7	5.4	-25.7	26.2	SE	15.0
2	NJ	Camden	5.9	78.5	2.2	1241.5	95.6	21.4	-11.8	24.4	SE	15.0
2	NJ	Burlington	5.6	84.1	1.3	1258.0	103.6	37.9	-3.7	38.1	SE	15.0
2	NJ	Cape May	5.5	89.6	0.6	1267.0	30.3	46.9	-77.1	90.2	SE	15.0
2	NJ	Atlantic	3.3	92.9	0.5	1267.1	65.5	47.0	-41.9	63.0	SE	15.0
2	NJ	Cumberland	2.8	95.7	0.4	1267.1	65.5	47.0	-41.9	63.0	SE	16.0
2	NJ	Salem	2.6	98.3	1.1	1215.5	66.4	-4.6	-41.0	41.2	SW	29.0
3	MD	Cecil	1.8	100.1	0.4	1168.1	58.2	-52.0	-49.2	71.5	SW	28.0

Wind Direction and Distance Weighting: The weighted emissions ranking of counties considers the contribution of pollutants to the "urban excess" of the MSA on a speciated basis. The general form of the ranking considers each county in the same way, regardless of direction and distance from the violating monitor. To account for the effect of direction and distance in a simplistic way a modified emissions score was calculated as follows. For each county in and adjacent to the MSA the distance and general direction (expressed as a compass quadrant) of the county centroid to the MSA's design value monitor were determined. For each county a 10-year or longer average frequency of occurrence of the wind direction quadrant was derived. The county's weighted emissions score was modified by multiplying the score by the percentage of the wind direction from the county centroid to the design value monitor and divided by the distance in kilometers. For example, if the wind frequency was 25% and the distance was 50 kilometers, the emissions score would be modified by the fraction of 25/50, or 0.5. The cumulative percentages were then calculated by normalizing by the sum of the modified emissions scores.

Factor 8 Jurisdictional Boundaries: The Philadelphia MSA was designated Subpart (Basic) 1 nonattainment for the 8-hour ozone standard.

Factor 9 Level of Control of emission sources: There are many sources in the metropolitan area; e level of control of sources was not a significant issue.

Pittsburgh Area

Discussion

The Pittsburgh Metropolitan Statistical Area (MSA) is comprised of six counties. The MSA was adjusted in 2003 to add Armstrong County to the metropolitan area. Also in 2003, the Pittsburgh-New Castle, PA Combined Statistical Area was formed with the addition of Lawrence County. Four counties in this MSA have monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 µg/m³. Based on the monitored violations, the Pittsburgh MSA is considered a presumptive nonattainment area. The four counties monitoring violations are Allegheny, Beaver, Westmoreland and Washington. Allegheny County monitored 21.2 µg/m³ for the time period 2001-2003. This value is being considered the Design Value for the nonattainment area.

The Commonwealth of Pennsylvania recommended, in the Governor Edward Rendell correspondence of March 5, 2004, the four violating metropolitan counties to be included in the Pittsburgh nonattainment area.

EPA has reviewed the Commonwealth's recommendations as well as additional data and agrees with the recommendation of the four MSA counties. EPA also agrees with the recommendation that Fayette County, although part of the presumptive nonattainment area be excluded from the nonattainment boundary. EPA intends, based on the information reviewed, to designate an additional MSA county, Butler, with Allegheny, Beaver, Westmoreland and Washington, as nonattainment in the Pittsburgh area. In addition, EPA intends to add three adjacent counties, Armstrong, Greene and Lawrence to the nonattainment area.

Summary of Evaluation

EPA has identified Fayette County, part of the presumptive area as having very low contribution to the area. A review of the factors provides sufficient evidence to modify the nonattainment boundary to exclude these counties.

The adjacent counties of Armstrong and Greene showed high emissions contribution to the area, based on the weighted emissions factor. EPA has reviewed these counties based on all the factors to determine the appropriate designation. The population density, growth and commuting patterns when compared to the core MSA counties in this area support including these counties in the nonattainment area. In addition, a review of the data suggests contribution to the area from Lawrence County as well. The tables below summarize the data used support the modification of Pennsylvania's June 1 revision to the recommendations to include Armstrong, Butler, Greene and Lawrence as nonattainment with the four violating counties in the MSA.

SUMMARY OF PITTSBURGH, PA MSA					
EPA Reg	ST	COUNTY	State Recommend PM _{2.5} Designation	Region 3 INTENDED PM _{2.5} DESIGNATION	Area - '99 C/MSA
3	PA	Allegheny	Nonattainment	Nonattainment	Pittsburgh, PA
3	PA	Beaver	Nonattainment	Nonattainment	Pittsburgh, PA
3	PA	Westmoreland	Nonattainment	Nonattainment	Pittsburgh, PA
3	PA	Washington	Nonattainment	Nonattainment	Pittsburgh, PA
3	PA	Butler	Attainment	Nonattainment	Pittsburgh, PA
3	PA	Fayette	Attainment	Attainment/unclassifiable	Pittsburgh, PA
3	PA	Armstrong	Attainment	Nonattainment	* Added in 2003
3	PA	Greene	Attainment	Nonattainment	
3	PA	Indiana	Attainment	Nonattainment	
3	WV	Marshall	Nonattainment	Nonattainment	Wheeling, WV-OH
3	WV	Monongalia	Nonattainment	Nonattainment	
3	PA	Lawrence	Attainment	Nonattainment	* Added in 2003
3	WV	Preston	Attainment	Attainment/unclassifiable	
3	WV	Hancock	Nonattainment	Nonattainment	Steubenville-Weirton, OH-WV
5	OH	Mahoning	Nonattainment	Nonattainment	Youngstown-Warren, OH
3	PA	Cambria	Nonattainment	Nonattainment	Johnstown, PA
5	OH	Columbiana	Attainment	Nonattainment	Youngstown-Warren, OH
3	PA	Mercer	Attainment	Nonattainment	Sharon, PA
3	PA	Somerset	Attainment	Attainment/unclassifiable	Johnstown, PA
3	PA	Venango	Attainment	Attainment/unclassifiable	
3	PA	Clarion	Attainment	Attainment/unclassifiable	
3	MD	Garrett	Attainment	Attainment/unclassifiable	
3	PA	Jefferson	Attainment	Attainment/unclassifiable	
3	WV	Brooke	Nonattainment	Nonattainment	Steubenville-Weirton, OH-WV
3	WV	Ohio	Nonattainment	Nonattainment	Wheeling, WV-OH

SUMMARY OF FACTOR 1: EMISSIONS PITTSBURGH, PA MSA										
Counties sorted by Largest Weighted Emissions Contribution										
EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)						Weighted Emissions	
			PM	SO2	NOX	VOC	Amm	Carbon		Crustal
3	PA	Armstrong	12,338	191,070	26,670	3,531	555	2,701	7,726	60.3
3	PA	Greene	11,626	186,481	31,832	2,756	256	2,548	7,223	59.2
3	PA	Indiana	10,981	158,311	52,550	4,683	692	2,428	6,868	55.1
3	PA	Allegheny	10,837	61,168	81,166	54,821	2,655	4,570	4,576	46.6
3	WV	Marshall	5,596	113,921	44,521	4,125	122	1,319	3,417	38.2
3	WV	Monongalia	5,459	81,413	17,545	5,606	185	1,320	3,331	27.3
3	PA	Beaver	4,948	40,380	39,564	8,738	543	1,368	2,900	21.3
3	PA	Lawrence	3,173	35,620	13,065	4,890	647	681	1,833	13.2
3	PA	Westmoreland	3,320	3,593	18,461	17,371	1,119	1,533	1,564	10.7
3	PA	Washington	3,011	8,221	22,097	9,392	813	1,190	1,505	10.6
3	WV	Preston	1,715	21,864	6,528	1,874	271	465	1,021	8.1
3	WV	Hancock	4,335	1,982	4,961	3,585	571	1,243	1,747	7.2
5	OH	Mahoning	1,849	3,511	12,210	15,043	845	920	804	6.8
3	PA	Butler	2,166	4,798	9,706	8,697	751	806	1,224	6.4
3	PA	Cambria	1,594	8,716	8,287	7,229	490	679	804	6.4
3	PA	Fayette	1,600	2,053	6,788	6,625	458	641	856	4.5
5	OH	Columbiana	1,187	1,291	5,825	5,881	1,250	442	696	3.3
3	PA	Mercer	1,271	874	7,459	8,110	1,095	412	760	3.3
3	PA	Somerset	1,139	1,548	4,706	4,769	1,494	415	659	3.0
3	PA	Venango	661	3,261	3,896	3,945	232	284	332	2.6
3	PA	Clarion	790	1,629	4,031	3,030	435	291	396	2.3
3	MD	Garrett	571	709	4,445	2,424	719	275	268	2.1
3	PA	Jefferson	691	936	4,044	2,906	425	253	341	2.0
3	WV	Brooke	527	1,663	2,500	4,358	439	191	277	1.6
3	WV	Ohio	351	514	3,609	2,779	123	192	135	1.5

SUMMARY OF FACTOR 2: AIR QUALITY PITTSBURGH, PA MSA
Counties Sorted by Highest Monitored and Estimated Air Quality

EPA Reg	ST	COUNTY	Design Values						Estimated Air Quality based	
			'01-'03		'00-'02		'99-'01		Maximum Estimate (inc. real)	#viol pts / #total pts
3	PA	Allegheny	21.2	NA	21.4	NA	21.0	NA	21.4	11/17
3	WV	Hancock	17.4	NA	17.5	NA	17.4	NA	17.5	4/4
3	PA	Beaver	16.0	NA	16.0	NA	16.4	na	16.0	6/8
3	PA	Cambria	15.8	NA	15.8	NA	15.3	NA	15.8	5/13
3	WV	Marshall	15.7	NA	16.0	NA	16.5	NA	16.0	7/7
3	PA	Westmoreland	15.5	NA	15.6	NA	15.6	NA	17.6	15/15
3	PA	Washington	15.5	NA	15.7	NA	15.5	NA	15.9	11/14
5	OH	Mahoning	15.2	NA	15.7	NA	16.4	NA	16.1	7/7
3	WV	Monongalia	14.9	A	15.0	A	15.0	A	15.6	2/5
3	PA	Mercer	14.3	A	14.6	a	14.9	a	14.7	0/9
5	OH	Columbiana	No Monitor						16.5	6/6
3	PA	Fayette	No Monitor						15.9	10/15
3	PA	Armstrong	No Monitor						15.6	4/10
3	PA	Greene	No Monitor						15.6	9/9
3	PA	Indiana	No Monitor						15.6	5/12
3	PA	Lawrence	No Monitor						15.5	3/4
3	PA	Butler	No Monitor						15.2	1/14
3	WV	Preston	No Monitor						14.5	0/8

SUMMARY OF FACTOR 3: POPULATION

Counties Sorted by Population - Highest to Lowest

EPA Reg	ST	COUNTY	Population & Area		
			2002	Area (sq miles)	Density '02
3	PA	Allegheny	1,269,904	730	1,740
3	PA	Westmoreland	368,428	1,023	360
5	OH	Mahoning	253,308	415	610
3	PA	Washington	204,110	857	238
3	PA	Beaver	179,351	435	412
3	PA	Butler	178,078	789	226
3	PA	Cambria	150,452	688	219
3	PA	Fayette	146,654	790	186
3	PA	Mercer	119,514	672	178
5	OH	Columbiana	111,806	533	210
3	PA	Lawrence	94,104	361	261
3	PA	Indiana	88,780	830	107
3	WV	Monongalia	82,895	361	230
3	PA	Armstrong	71,673	654	110
3	PA	Greene	40,520	576	70
3	WV	Marshall	34,898	307	114
3	WV	Hancock	32,082	83	387
3	WV	Preston	29,460	648	45

SUMMARY OF FACTOR 3: POPULATION

Counties Sorted by Density- Highest to Lowest

EPA Reg	ST	COUNTY	Population & Area		
			2002	Area (sq miles)	Density '02
3	PA	Allegheny	1,269,904	730	1,740
5	OH	Mahoning	253,308	415	610
3	PA	Beaver	179,351	435	412
3	WV	Hancock	32,082	83	387
3	PA	Westmoreland	368,428	1,023	360
3	PA	Lawrence	94,104	361	261
3	PA	Washington	204,110	857	238
3	WV	Monongalia	82,895	361	230
3	PA	Butler	178,078	789	226
3	PA	Cambria	150,452	688	219
5	OH	Columbiana	111,806	533	210
3	PA	Fayette	146,654	790	186
3	PA	Mercer	119,514	672	178
3	WV	Marshall	34,898	307	114
3	PA	Armstrong	71,673	654	110
3	PA	Indiana	88,780	830	107
3	PA	Greene	40,520	576	70
3	WV	Preston	29,460	648	45

SUMMARY FACTOR 4: COMMUTING PATTERNS;**Counties sorted by VMT - Highest to Lowest**

EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro	
			2002	Percent	Number
3	PA	Allegheny	10,522	6	35,095
3	PA	Westmoreland	3,217	31	51,192
5	OH	Mahoning	2,576	1	842
3	PA	Washington	2,057	36	32,606
3	PA	Butler	1,634	29	23,908
3	PA	Beaver	1,582	36	29,617
3	PA	Mercer	1,410	4	2,100
3	PA	Cambria	1,176	2	990
3	PA	Fayette	1,139	30	17,491
5	OH	Columbiana	928	5	2,676
3	PA	Lawrence	822	18	7,307
3	WV	Monongalia	810	2	601
3	PA	Indiana	727	11	4,008
3	PA	Armstrong	624	34	10,096
3	PA	Greene	560	24	3,605
3	WV	Preston	294	1	177
3	WV	Marshall	233	4	495
3	WV	Hancock	212	16	2,281

SUMMARY FACTOR 4: COMMUTING PATTERNS;**Counties sorted by Number of Commuters Highest to Lowest**

EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro	
			2002	Percent	Number
3	PA	Westmoreland	3,217	31	51,192
3	PA	Allegheny	10,522	6	35,095
3	PA	Washington	2,057	36	32,606
3	PA	Beaver	1,582	36	29,617
3	PA	Butler	1,634	29	23,908
3	PA	Fayette	1,139	30	17,491
3	PA	Armstrong	624	34	10,096
3	PA	Lawrence	822	18	7,307
3	PA	Indiana	727	11	4,008
3	PA	Greene	560	24	3,605
5	OH	Columbiana	928	5	2,676
3	WV	Hancock	212	16	2,281
3	PA	Mercer	1,410	4	2,100
3	PA	Cambria	1,176	2	990
5	OH	Mahoning	2,576	1	842
3	WV	Monongalia	810	2	601
3	WV	Marshall	233	4	495
3	WV	Preston	294	1	177

SUMMARY FACTOR 5: EXPECTED GROWTH									
PITTSBURGH, PA MSA									
Counties sorted by Growth Rate - Highest to Lowest									
EPA Reg	ST	COUNTY	Population			VMT		EPA INTENDED PM _{2.5} DESIGNATION	
			2002	Growth '90-'00	Pct chng '90-'00	Growth '02-'10	Pct chng '02-'10		
3	PA	Allegheny	1,269,904	-54,783	-4	3,233	31	Nonattainment	
3	PA	Beaver	179,351	-4,681	-3	420	27	Nonattainment	
3	PA	Westmoreland	368,428	-328	-0	762	24	Nonattainment	
3	PA	Washington	204,110	-1,687	-1	264	13	Nonattainment	
3	PA	Butler	178,078	22,070	15	-156	-10	Nonattainment	
3	PA	Fayette	146,654	3,293	2	431	38	Attainment/unclassifiable	
3	PA	Armstrong	71,673	-1,086	-1	280	45	Nonattainment	
3	PA	Greene	40,520	1,122	3	-52	-9	Nonattainment	
3	PA	Indiana	88,780	-389	-0	306	42	Nonattainment	
3	WV	Marshall	34,898	-1,837	-5	241	103	Nonattainment	
3	WV	Monongalia	82,895	6,357	8	-180	-22	Nonattainment	
3	PA	Lawrence	94,104	-1,603	-2	59	7	Nonattainment	
3	WV	Preston	29,460	297	1	71	24	Attainment/unclassifiable	
3	WV	Hancock	32,082	-2,566	-7	192	91	Nonattainment	
5	OH	Mahoning	253,308	-7,251	-3	242	9	Nonattainment	
3	PA	Cambria	150,452	-10,431	-6	513	44	Nonattainment	
5	OH	Columbiana	111,806	3,799	4	215	23	Attainment/unclassifiable	
3	PA	Mercer	119,514	-710	-1	-182	-13	Nonattainment	

Factors 6 and 7 Meteorology and Geography/Topography											
EPA Reg	ST	COUNTY	Basic Weighted Emissions	WD & 1/x Weighted Emissions	LCC x	LCC y	Delta X	Delta Y	Dist	Quad	Freq
3	PA	Allegheny	46.6	21.6	815.809	100.491	-14.922	12.958	19.8	NW	30
3	PA	Greene	59.5	6.6	806.167	33.795	-24.564	-53.737	59.1	SW	33
3	WV	Marshall	38.4	3.6	772.625	30.062	-58.107	-57.470	81.7	SW	36
3	PA	Armstrong	60.6	3.2	855.170	141.428	24.439	53.896	59.2	NE	16
3	WV	Monongalia	27.5	2.4	825.487	13.040	-5.245	-74.492	74.7	SW	31
3	PA	Beaver	21.3	3.0	785.201	121.217	-45.531	33.684	56.6	NW	29
3	PA	Indiana	55.3	2.2	886.533	129.151	55.802	41.618	69.6	NE	13
3	PA	Washington	10.6	3.4	798.250	70.428	-32.481	-17.104	36.7	SW	35
3	PA	Westmoreland	10.6	2.5	861.127	87.534	30.396	0.002	30.4	E	20
3	PA	Lawrence	13.3	1.0	783.103	152.786	-47.628	65.254	80.8	NW	27
3	WV	Hancock	7.2	1.2	770.307	102.708	-60.425	15.176	62.3	NW	29
3	PA	Butler	6.3	1.0	816.459	149.515	-14.273	61.983	63.6	NW	29
3	PA	Fayette	4.5	0.6	850.982	45.751	20.250	-41.782	46.4	SE	19
3	WV	Preston	8.2	0.4	859.131	-3.400	28.400	-90.932	95.3	SE	19
5	OH	Mahoning	6.8	0.6	745.889	152.527	-84.842	64.994	106.9	NW	25
3	WV	Brooke	1.6	0.3	773.479	75.883	-57.253	-11.650	58.4	SW	36
5	OH	Columbiana	3.3	0.3	749.081	124.609	-81.650	37.077	89.7	NW	27
3	PA	Cambria	6.4	0.3	920.052	114.962	89.320	27.430	93.4	NF	13
3	WV	Ohio	1.5	0.3	772.232	55.601	-58.499	-31.932	66.6	SW	36
3	PA	Mercer	3.3	0.3	784.032	187.048	-46.700	99.516	109.9	NW	26
3	PA	Somerset	3.0	0.3	902.731	57.208	72.000	-30.325	78.1	SE	19
3	PA	Venango	2.6	0.2	823.446	201.616	-7.286	114.084	114.3	NW	24
3	MD	Garrett	2.1	0.1	887.537	9.919	56.806	-77.613	96.2	SE	19
3	PA	Clarion	2.3	0.1	852.389	183.765	21.658	96.233	98.6	NE	13
3	PA	Jefferson	2.0	0.1	889.321	179.637	58.590	92.105	109.2	NF	13

Wind Direction and Distance Weighting: The weighted emissions ranking of counties considers the contribution of pollutants to the "urban excess" of the MSA on a species basis. The general form of the ranking considers each county in the same way, regardless of direction and distance from the violating monitor. To account for the effect of direction and distance in a simplistic way a modified emissions score was calculated as follows. For each county in and adjacent to the MSA the distance and general direction (expressed as a compass quadrant) of the county centroid to the MSA's design value monitor were determined. For each county a 10-year or longer average frequency of occurrence of the wind direction quadrant was derived. The county's weighted emissions score was modified by multiplying the score by the percentage of the wind direction from the county centroid to the design value monitor and divided by the distance in kilometers. For example, if the wind frequency was 25% and the distance was 50 kilometers, the emissions score would be modified by the fraction of 2550, or 0.5. The cumulative percentages were then calculated by normalizing by the sum of the modified emissions scores.

Factor 8 Jurisdictional Boundaries: The Pittsburgh MSA was designated Subpart (Basic) 1 nonattainment for the 8-hour ozone standard. Butler and Mercer County were included in the ozone nonattainment area. Lawrence County was designated attainment.

Factor 9 Level of Control of emission sources: There are a number of significant emission sources in the Pittsburgh metropolitan area. Many do not have state of the art controls.

Reading Area

Discussion

The Reading Metropolitan Statistical Area (MSA) is a single county area. Berks County has monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 µg/m³. Based on the monitored violations, the Reading MSA is considered a presumptive nonattainment area. Berks has monitored 16.4 µg/m³ for the time period 2001-2003. This monitor is intended to be used as the Design Value monitor for the Reading nonattainment area.

The Commonwealth of Pennsylvania recommended, in the Governor Edward Rendell correspondence of March 5, 2004, Berks County to be designated nonattainment as a single county MSA. EPA agrees with the Commonwealth's recommendation for this area.

EPA reviewed the surrounding counties of Lehigh and Northampton. The other surrounding counties were reviewed as part of other potential nonattainment areas. Based on the review of the factors, EPA intends to designate Lehigh and Northampton counties as attainment.

The tables below substantiate Pennsylvania's recommendation for the Reading area.

SUMMARY OF Reading, PA MSA

EPA Reg	ST	COUNTY	State Recommend PM _{2.5} Designation	EPA Intent PM _{2.5} Designation	Area - '99 C/MSA
C/MSA Total (excluding surrounding) = 1 county					
3	PA	Berks	Nonattainment	Nonattainment	Reading, PA
3	PA	Chester	Attainment	Nonattainment	Philadelphia, PA-NJ
3	PA	Lancaster	Nonattainment	Nonattainment	Lancaster, PA
3	PA	Lebanon	Nonattainment	Nonattainment	Harrisburg-Lebanon-Carlisle, PA
3	PA	Lehigh	Attainment	Attainment	Allentown-Bethlehem-Easton, PA
3	PA	Montgomery	Attainment	Nonattainment	Philadelphia, PA-NJ
3	PA	Northampton	Attainment	Attainment	Allentown-Bethlehem-Easton, PA
3	PA	Schuylkill	Attainment	Attainment	

SUMMARY OF FACTOR 1: EMISSIONS

**** Counties Listed by Percent Contribution to Area****

EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)						Weighted Emission	
			PM	SO2	NOX	VOC	Amm	Carbon		Crustal
3	PA	Berks	4.806	17.143	21.834	21.506	4.133	1.520	2.821	100
3	PA	Chester	3.716	11.391	16.909	17.697	2.267	1.228	2.226	77.5
3	PA	Lancaster	5.673	10.786	20.901	27.383	17.154	1.746	3.569	99.5
3	PA	Lebanon	1.451	2.758	6.284	6.931	4.593	468	903	28.2
3	PA	Lehigh	1.844	6.027	12.154	14.418	792	624	1.018	47.7
3	PA	Montgomery	3.910	8.721	21.191	32.545	1.293	1.905	1.700	102.8
3	PA	Northampton	5.646	55.105	24.051	10.401	805	1,212	3,374	
3	PA	Schuylkill	1.441	8,390	7.857	7.212	1,311	483	833	35.8

SUMMARY OF FACTOR 2: AIR QUALITY

EPA Reg	ST	COUNTY	Design Values						Estimated Air Quality	
			'01-'03	'00-'02	'99-'01	Maximum Estimate (inc. real)	# Estimated violating point/ #total pts			
3	PA	Berks	16.4	NA	16.7	NA	15.6	NA	16.7	16/16
3	PA	Chester	15.1	na	14.6	a			16.1	10/11
3	PA	Lancaster	17.0	NA	17.1	NA	16.9	NA	17.1	15/15
3	PA	Lebanon							16.3	4/5
3	PA	Lehigh	14.6	a	14.3	A	13.8	a	14.9	0/8
3	PA	Montgomery	14.3	A	14.2	A	13.8	a	15.3	1/6
3	PA	Northampton	14.8	A	14.6	a	14.0	a	14.1	0/4
3	PA	Schuylkill							15.1	1/10

SUMMARY OF FACTOR 3 A: POPULATION					
Sorted Highest to Lowest					
			2002	Area (sq miles)	Density '02
3	PA	Montgomery	766,517	483	1,587
3	PA	Lancaster	478,561	949	504
3	PA	Chester	450,160	756	595
3	PA	Berks	382,108	859	445
3	PA	Lehigh	317,533	347	915
3	PA	Northampton	273,324	374	731
3	PA	Schuylkill	148,505	779	191
3	PA	Lebanon	121,199	362	335

SUMMARY OF FACTOR 3 A: POPULATION DENSITY					
Sorted Highest to Lowest					
			2002	Area (sq miles)	Density '02
3	PA	Montgomery	766,517	483	1,587
3	PA	Lehigh	317,533	347	915
3	PA	Northampton	273,324	374	731
3	PA	Chester	450,160	756	595
3	PA	Lancaster	478,561	949	504
3	PA	Berks	382,108	859	445
3	PA	Lebanon	121,199	362	335
3	PA	Schuylkill	148,505	779	191

Factor 4: Commuting Patterns: Sorted by VMT Highest					
EPA Reg	ST	COUNTY	VMT	Commuting to Other	
			2002	Percent	Number
3	PA	Montgomery	4,677	1	4,231
3	PA	Lancaster	4,004	2	4,074
3	PA	Berks	3,952		
3	PA	Chester	3,128	1	1,916
3	PA	Lehigh	2,738	2	3,266
3	PA	Northampton	2,132	3	3,766
3	PA	Schuylkill	1,463	9	5,790
3	PA	Lebanon	1,136	5	2,799

SUMMARY FACTOR 4 B: COMMUTING PATTERNS:					
Sorted by Number of Commuters Highest to Lowest					
EPA Reg	ST	COUNTY	VMT	Commuting to Other	
			2002	Percent	Number
3	PA	Berks	3,952		
3	PA	Schuylkill	1,463	9	5,790
3	PA	Montgomery	4,677	1	4,231
3	PA	Lancaster	4,004	2	4,074
3	PA	Northampton	2,132	3	3,766
3	PA	Lehigh	2,738	2	3,266
3	PA	Lebanon	1,136	5	2,799
3	PA	Chester	3,128	1	1,916

SUMMARY FACTOR 5: EXPECTED GROWTH;

Sorted by '90-'00 Growth Highest to Lowest									
EPA Reg	ST	COUNTY	Population			VMT		VMT	
			2002	Growth '90-'00	Pct chng '90-'00	Growth '96-'02	Pct chng '96-'02	Projected Growth '02-'10	Pct chng '02-'10
3	PA	Berks	382,108	37,115	11	1,026	35	-230	-6
3	PA	Chester	450,160	57,105	15	23	1	785	25
3	PA	Lancaster	478,561	47,836	11	388	11	850	21
3	PA	Lebanon	121,199	6,583	6	301	36	46	4
3	PA	Lehigh	317,533	20,960	7	178	7	517	19
3	PA	Montgomery	766,517	71,986	11	-141	-3	1,344	29
3	PA	Schuylkill	148,505	-2,249	-1	422	41	-139	-10
3	PA	Northampton	273,324	19,961	8	145	7	631	30

Factors 6 and 7 Meteorology and Geography/Topography

EPA Reg	ST	COUNTY	Basic Weighted Emissions	WD & 1/x Weighted Emissions	LCC x	LCC y	Delta X	Delta Y	Dist	Quad	Freq
Reading, PA											
3	PA	Montgomery	102.8	103	1151.116	135.970					
3	PA	Berks	100	100	1198.921	130.669	47.806	-5.301	48.1	SE	14
3	PA	Lancaster	99.5	100	1150.368	142.537	-0.747	6.567	6.6	NW	38
3	PA	Chester	77.5	78	1129.403	103.286	-21.712	-32.684	39.2	SW	23
3	PA	Lehigh	47.7	48	1170.962	102.051	19.846	-33.919	39.3	SE	15
3	PA	Schuylkill	35.8	36	1169.469	171.244	18.354	35.274	39.8	NE	21
3	PA	Lebanon	28.2	28	1121.709	170.793	-29.407	34.823	45.6	NW	39
3	PA	Northampton			1107.952	133.462	-43.164	-2.508	43.2	SW	24
3	PA	Northampton			1191.769	187.953	40.653	51.983	66.0	NE	21

Wind Direction and Distance

nce Weighting; The weighted emissions ranking of counties considers the contribution of pollutants to the "urban excess" of the MSA on a speciated basis. The general form of the ranking considers each county in the same way, regardless of direction and distance from the violating monitor. To account for the effect of direction and distance in a simplistic way a modified emissions score was calculated as follows. For each county in and adjacent to the MSA the distance and general direction (expressed as a compass quadrant) of the county centroid to the MSA's design value monitor were determined. For each county a 10-year or longer average frequency of occurrence of the wind direction quadrant was derived. The county's weighted emissions score was modified by multiplying the score by the percentage of the wind direction from the county centroid to the design value monitor and divided by the distance in kilometers. For example, if the wind frequency was 25% and the distance was 50 kilometers, the emissions score would be modified by the fraction of 25/50, or 0.5. The cumulative percentages were then calculated by normalizing by the sum of the modified emissions scores.

Factor 8 Jurisdictional Boundaries: The Reading MSA was designated Subpart (Basic) 1 nonattainment for the 8-hour ozone standard.

Factor 9 Level of Control of emission sources: The Martins Creek Power Plant has a state order to shut down coal units by the year 2007. This conversion will greatly reduce the emissions from Northampton County.

York Area

The York metropolitan Statistical Area (MSA) is a single county area. York County has monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 µg/m³. Based on monitored violations, the York MSA is considered a presumptive nonattainment area. York has monitored 17.3 µg/m³ for the time period 2001-2003. This monitor is intended to be used as the Design Value monitor for the York nonattainment area.

The Commonwealth of Pennsylvania recommended, in the Governor Edward Rendell correspondence of March 5, 2004, York County to be designated nonattainment as a single county MSA. EPA agrees with the Commonwealth's recommendation for this area.

Youngstown Area

Discussion

The Youngstown, OH Metropolitan Statistical Area (MSA) was adjusted by OMB in 2003 to include, in part, of one county in Pennsylvania. The core metropolitan counties, Trumbull, Mahoning and Columbiana counties in Ohio, have been reviewed by EPA Region 5 and are discussed in a separate document. Two Ohio counties in this MSA have monitored violations of the fine particulate (PM_{2.5}) National Ambient Air Quality Standard (NAAQS) of 15.0 µg/m³. Based on the monitored violations, the Youngstown MSA is considered a presumptive nonattainment area.

Review of the factors for Mercer County have identified that although emissions contribution is comparatively low, there is moderate population and commuting. The inclusion of this county in the 2003 urban area adds additional evidence to the conclusion that Mercer is part of the metropolitan area. The factors suggest inclusion of Mercer County with the Youngstown area.

SUMMARY OF Youngstown, OH MSA									
EPA Reg	ST	COUNTY	State Recommend PM _{2.5} Designation	Region 3 INTENDED PM _{2.5} DESIGNATION	Area - '99 C/MSA				
5	OH	Trumbull	Nonattainment	Nonattainment	Youngstown-Warren, OH				
5	OH	Mahoning	Nonattainment	Nonattainment	Youngstown-Warren, OH				
5	OH	Columbiana	Attainment	Nonattainment	Youngstown-Warren, OH				
5	OH	Jefferson	Nonattainment	Nonattainment	Steubenville-Weirton, OH-WV				
3	PA	Mercer	Attainment	Nonattainment	Sharon, PA				
3	PA	Beaver	Nonattainment	Nonattainment	Pittsburgh, PA				
3	PA	Butler	Attainment	Nonattainment	Pittsburgh, PA				
5	OH	Ashtabula	Attainment	Nonattainment	Cleveland-Lorain-Elvria, OH				
5	OH	Geauga	Attainment	Nonattainment	Cleveland-Lorain-Elvria, OH				
5	OH	Stark	Nonattainment	Nonattainment	Canton-Massillon, OH				
5	OH	Carroll	Attainment	Attainment/unclassifiable	Canton-Massillon, OH				
5	OH	Portage	Nonattainment	Nonattainment	Akron, OH				
3	PA	Lawrence	Attainment	Nonattainment					
3	PA	Crawford	Attainment	Attainment/unclassifiable					
3	PA	Venango	Attainment	Attainment/unclassifiable					

EPA Reg	ST	COUNTY	Total Emissions, 2001 (tons)							Weighted Emissions
			PM	SO2	NOX	VOC	Amm	Carbon	Crustal	
5	OH	Jefferson	12,247	217,794	61,402	4,082	287	2,723	7,529	30.6
3	PA	Beaver	4,948	40,380	39,564	8,738	543	1,368	2,900	13.9
5	OH	Trumbull	2,882	30,327	19,010	17,417	808	1,217	1,365	9.4
5	OH	Stark	3,686	2,736	14,968	22,319	3,442	1,255	2,158	8.5
5	OH	Ashtabula	2,145	14,985	16,470	11,330	701	870	1,098	7.0
3	PA	Lawrence	3,173	35,620	13,065	4,890	647	681	1,833	6.7
5	OH	Mahoning	1,849	3,511	12,210	15,043	845	920	804	6.1
3	PA	Butler	2,166	4,798	9,706	8,697	751	806	1,224	5.5
5	OH	Portage	1,581	1,643	9,120	8,654	516	712	794	4.7
3	PA	Crawford	1,367	1,231	8,034	5,665	1,370	413	772	3.3
3	PA	Mercer	1,271	874	7,459	8,110	1,095	412	760	3.2
5	OH	Columbiana	1,187	1,291	5,825	5,881	1,250	442	696	3.0
5	OH	Geauga	1,155	624	3,985	4,973	405	472	648	2.9
3	PA	Venango	661	3,261	3,896	3,945	232	284	332	2.0
5	OH	Carroll	363	386	1,886	1,422	375	120	234	0.9

SUMMARY OF FACTOR 2: AIR QUALITY								
Counties Sorted by Highest Monitored and Estimated Air Quality								
EPA Reg	ST	COUNTY	Design Values					
			'01-'03		'00-'02		'99-'01	
5	OH	Jefferson	17.8	NA	18.2	NA	18.9	NA
5	OH	Stark	17.3	NA	17.9	NA	18.3	NA
3	PA	Beaver	16.0	NA	16.0	NA	16.4	na
5	OH	Mahoning	15.2	NA	15.7	NA	16.4	NA
5	OH	Trumbull	15.0	A	15.6	NA	16.2	NA
3	PA	Mercer	14.3	A	14.6	a	14.9	a
5	OH	Portage	14.2	A	15.1	NA	15.3	NA
5	OH	Ashtabula	No monitor					
3	PA	Lawrence	No monitor					
3	PA	Crawford	No monitor					
5	OH	Columbiana	No monitor					
5	OH	Geauga	No monitor					
5	OH	Carroll	No monitor					
3	PA	Butler	No monitor					
3	PA	Venango	No monitor					

Factor 3 Population

EPA Reg	ST	COUNTY	Population & Area		
			2002	Area (sq miles)	Density '02
5	OH	Jefferson	72,402	410	177
3	PA	Beaver	179,351	435	412
5	OH	Trumbull	223,518	616	363
5	OH	Stark	377,940	576	656
5	OH	Ashtabula	102,515	703	146
3	PA	Lawrence	94,104	361	261
5	OH	Mahoning	253,308	415	610
5	OH	Portage	153,886	492	313
3	PA	Crawford	89,856	1,013	89
3	PA	Mercer	119,514	672	178
5	OH	Columbiana	111,806	533	210
5	OH	Geauga	92,980	404	230
5	OH	Carroll	29,166	395	74
3	PA	Butler	178,078	789	226
3	PA	Venango	56,810	675	84

Factor 4 VMT Highest to Lowest

EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro	
			2002	Percent	Number
5	OH	Stark	3,135	1	1,970
5	OH	Mahoning	2,576	21	22,894
5	OH	Trumbull	2,108	13	12,347
5	OH	Portage	1,796	3	2,234
3	PA	Butler	1,634	0	249
3	PA	Beaver	1,582	1	689
3	PA	Mercer	1,410	8	3,949
5	OH	Ashtabula	1,107	1	636
3	PA	Crawford	981	0	168
5	OH	Columbiana	928	18	9,090
5	OH	Geauga	901	1	415
3	PA	Lawrence	822	6	2,425
5	OH	Jefferson	741	3	726
3	PA	Venango	554	0	46
5	OH	Carroll	193	3	370

Factor 4 Commuters Highest to Lowest

EPA Reg	ST	COUNTY	VMT	Commuting to Other Metro	
			2002	Percent	Number
5	OH	Mahoning	2,576	21	22,894
5	OH	Trumbull	2,108	13	12,347
5	OH	Columbiana	928	18	9,090
3	PA	Mercer	1,410	8	3,949
3	PA	Lawrence	822	6	2,425
5	OH	Portage	1,796	3	2,234
5	OH	Stark	3,135	1	1,970
5	OH	Jefferson	741	3	726
3	PA	Beaver	1,582	1	689
5	OH	Ashtabula	1,107	1	636
5	OH	Geauga	901	1	415
5	OH	Carroll	193	3	370
3	PA	Butler	1,634	0	249
3	PA	Crawford	981	0	168
3	PA	Venango	554	0	46

Factor 5 Growth

EPA Reg	ST	COUNTY	Population			VMT	
			2002	Growth '90-'00	Pct chng '90-'00	Growth '02-'10	Pct chng '02-'10
3	PA	Butler	178,078	22,070	15	-156	-10
5	OH	Geauga	92,980	9,766	12	343	38
5	OH	Carroll	29,166	2,315	9	186	96
5	OH	Portage	153,886	9,476	7	95	5
3	PA	Crawford	89,856	4,197	5	-29	-3
5	OH	Columbiana	111,806	3,799	4	215	23
5	OH	Stark	377,940	10,513	3	989	32
5	OH	Ashtabula	102,515	2,907	3	-265	-24
5	OH	Trumbull	223,518	-2,697	-1	428	20
3	PA	Mercer	119,514	-710	-1	-182	-13
3	PA	Lawrence	94,104	-1,603	-2	59	7
3	PA	Beaver	179,351	-4,681	-3	420	27
5	OH	Mahoning	253,308	-7,251	-3	242	9
3	PA	Venango	56,810	-1,816	-3	-24	-4
5	OH	Jefferson	72,402	-6,404	-8	313	42

Enclosure C

An Explanation of EPA's 9-Factor Analysis

Factor 1. Emissions in areas potentially included versus excluded from the nonattainment area:

The analysis for factor 1 looks at emissions of carbonaceous particles ("carbon"), inorganic particles ("crustal"), SO₂, and NO_x. EPA computed a composite emission score for each county by multiplying the county's emissions as a fraction of the metropolitan area emissions for each of these pollutants times a corresponding air quality weighting factor. The air quality weighting factors for each area are given below and reflect the percentages of the total estimated "urban excess" value found as, respectively, carbonaceous particles, miscellaneous inorganic particles ("crustal material"), ammonium sulfate, and ammonium nitrate. These scores add to 100 for the metropolitan area counties. Composite scores were also calculated for counties adjacent to the metropolitan area. Tables presented under factor 1 present the emissions of carbonaceous particles, inorganic particles, SO₂, and NO_x and the composite emission scores for the counties in the corresponding metropolitan area and adjacent counties. Metropolitan area counties are in bold. Emissions data indicate the potential for a county to contribute to observed violations, often making the emissions data the most important factor in assessing boundaries of nonattainment areas.

"Urban excess" values are derived by comparing urban monitored component concentrations against rural monitored component concentrations. Concentrations of the four PM_{2.5} components are obtained from local data if available (or, if necessary, from the nearest available urban site), and are compared to available rural concentrations. The monitoring sites used for this purpose are identified below. Although this information is air quality information, it is presented under Factor 1 due to its integration into the analysis of emissions information.

Factor 2. Air quality in potentially included versus excluded areas:

The air quality analysis looks at the annual average design value for each area based on data for 2001 to 2003. Counties without monitors are not listed.

Factor 3. Population density and degree of urbanization including commercial development in included versus excluded areas:

Tables presented under factor 3 show the 2003 population for each metropolitan area, as well as the population density for each county in that area. Population data indicate the likelihood of population-based emissions that might contribute to violations.

Factor 4. Traffic and commuting patterns:

The traffic and commuting analysis looks at the number of commuters in each county who drive to another county within the metropolitan area ("Number"), the percent of total commuters in

each county who commute to other counties within the metropolitan area (“percent”)*, as well as the total Vehicle Miles Traveled (VMT) for each county in thousands of miles. A county with numerous commuters is generally an integral part of the area, and would be an appropriate part of the domain of some mobile source strategies, thus warranting inclusion in the nonattainment area.

*Note that the percent of commuters traveling to counties within the metropolitan area is based on the total number of commuters from that county. This total includes commuters who may travel outside the metropolitan area from their county of origin.

Factor 5. Expected growth:

The expected growth analysis looks at the percent growth for counties in each metropolitan area from 1990 to 2000.

Factor 6. Meteorology:

The meteorology analysis looks at wind data gathered over a ten year period by the National Weather Service. Tables presented under factor 6 list the annual average wind direction frequencies by quadrant for each county in the corresponding metropolitan area. These data show that annual average PM_{2.5} concentrations are influenced by emissions in any direction at various times, but these data may also suggest that emissions in some directions relative to the violation may be more prone to contribute than emissions in other directions.

Factor 7. Geography/topography:

The geography/topography analysis looks at physical features of the land that might have an effect on the airshed, and therefore, the distribution of particulate matter over an area. nonattainment areas.

Factor 8. Jurisdictional boundaries:

The analysis of jurisdictional boundaries looks at the planning and organizational structure of an area to determine if the implementation of controls in a potential nonattainment area can be carried out in a cohesive manner.

Factor 9. Level of control of emission sources:

The level of control analysis looks at what controls are currently implemented in each area.